



## *Introduction Of Invasive Species*

### **Invasive species: a global issue**

In natural ecosystems, species have evolved together in such a way that generally no single group completely dominates the system and, therefore, they can coexist. When an exotic species arrives or is introduced into an ecosystem, it is possible that it establishes and spreads so profusely that the native species completely disappear because they are being outcompeted. This rapid spread of exotic species is known as an invasion. The organisms that become invasive can belong to any trophic group, such as plants, mammals, invertebrates or fungal species. The impacts of these invasive species are not only notable aboveground; they also directly impact below ground diversity and processes or indirectly through changes in plant species inputs into the soil. Over time, an ecosystem that has been overrun with invasive species becomes more and more difficult to restore, as the actual habitat may be altered in such a way as to favour the invasive species.

### **Invasion risk**

The risk of invasion increases with the increase of introduction events. Throughout the last century these potential introduction events have increased tremendously due to greater human trade and mobility. At a global scale it is well recognised that invasive species pose a threat to global species diversity and that invasive species can create substantial economic losses. The Global Invasive Species Database, keeps track of which species are invasive, and which are becoming invasive, at a global scale.

Among the 100 worst invasive species globally there are not only plant species but also several ant species, (soil-borne) fungal pathogens, and soil-dwelling flatworm species. The ecosystems most prone to severe impacts of invasive species are those that have been isolated for a very long time, such as islands, because their native species can be very different from the exotic species.

A striking example is the invasion of the yellow crazy ants on Christmas Island in Southeast Asia, which led to dramatic ecosystem changes. The indigenous red crab is a key ecosystem engineer on Christmas Island whose feeding and burrowing activities determine the vegetation composition through its impact on the litter layer and plant regeneration.

### **Impacts of invasive plant species**

Of all types of invasive organisms, the invasion of plant species might be best well known by the general public especially when the invasive species cause direct nuisance to human health, such as by causing allergies. Less well known is the fact that invasive plant species can also have far reaching impacts on the species composition and functioning of whole ecosystems through plant-soil feedbacks that modify soil biology, chemistry and structure. The increase in soil organic carbon, nutrients and root biomass creates an environment that can support a large number of soil organisms, which, in turn, further promote the establishment of the invasive species. The biodiversity of these soils often increases significantly; however, the variety of organisms present also differs significantly from those found in the natural stands, once again limiting the growth of indigenous species.

*Soil Lovers say: Controlling Invasive Species Needs Persistence and Patience*

Ref: A Global Atlas of Soil Biodiversity p119